Thomas Tobin *Veterinary Surgeon*

Tuesday, January 28th, 2019

The Honorable Jan Schakowsky
Chairwoman
Energy and Commerce Subcommittee on Consumer Protection & Commerce
United States House of Representatives
2125 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Cathy McMorris Rodgers
Ranking Member
Energy and Commerce Subcommittee on Consumer Protection & Commerce
United States House of Representatives
2322 Rayburn House Office Building, Washington, D.C. 20515

Re: Lasix PROTECTS the Lungs of the Racing Horse and in so doing PROTECTS the Horse and also the Jockey: An Analysis and Opinions.

Dear Chairwoman Schakowsky and Ranking Member McMorris Rodgers,

I deeply appreciate the opportunity to submit a letter for the record expressing my concerns and opposition to H.R. 1754, and let me also thank you both for the opportunity to submit this important information for the record to the Energy and Commerce Subcommittee on Consumer Protection and Commerce for consideration at your January 28th, 2020 hearing on H.R.1754, the Horseracing Integrity Act of 2019. This letter and attachments are to make available my current best analysis and opinions concerning the reasons for the approaching 50 years or so approval of Lasix in New World racing. My analysis and opinions in this matter are based on my professional training and experience and my knowledge of the relevant scientific literature, equine pharmacology and the detection, pharmacokinetics, pharmacodynamics and chemistry of the substance in question, Lasix in the horse. The details of my professional training and experience are set forth in Appendix #1, my professional curriculum vitae.

By training I am a veterinarian, a pharmacologist and a toxicologist and I have been performing, publishing and evaluating research on Lasix in horses since 1975 (Attachment #1 Gabel et al, 1977). I draw attention to this long since published paper

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because the basic horsemen's opinions and veterinary practitioner evaluations presented in this now long ago 1977 paper have, over the years, been supported by evolving science and published scientific research, as I will be pleased to point out as I present this analysis and opinions.

The story of Lasix and racing horses is a 50 year story of field, i.e., horsemen's and veterinary practitioner evaluations and assessments of the beneficial effects of Lasix in the racing horse. These field evaluations of the beneficial effects of Lasix are set forth in the Gabel 1977 paper and now, forty plus years later, in 2020, forty years of science has basically confirmed and explained these beneficial effects as our understanding of EIPH, Exercise Induced Pulmonary Hemorrhage has developed. We note that the term Exercise Induced Pulmonary Hemorrhage did not even exist in 1977; as such, the Lasix and EIPH story is a classic story of half a century of scientific research confirming and explaining long standing and well established field observations and clinical experience.

The take home message of this analysis and opinions is that Lasix PROTECTS the lungs of the racing horse, and in so doing PROTECTS the horse and also the jockey. I will begin my presentation with a bullet point summary, I will then present specific sections with literature references supporting each bullet point and then close with a restatement of my bullet points and the take home message that Lasix PROTECTS the lungs of the racing horse and in so doing PROTECTS the horse and also the jockey.

BULLET POINT SUMMARY:

- The lung is by necessity a delicate structure, because it must facilitate the most rapid possible transfer of inhaled oxygen into the circulating blood.
- During racing ALL horses bleed into their lungs. Significant hemorrhage slows the horse and can cause acute death. This syndrome has been named Exercise Induced Pulmonary Hemorrhage, EIPH.
- Historically, American horsemen were long aware that water withholding pre-race PROTECTED against EIPH and its many adverse effects.
- In the sixties Lasix was found to enhance the water withholding PROTECTIVE effects, and Lasix began to be approved in American racing.
- Concerns about Lasix and drug testing have been fully addressed by the industry.
- Lasix is scientifically proven to PROTECT the lung against EIPH. Horses on Lasix bleed less into their lungs and run closer to their true potential. They are

less likely to suffer sudden death on the racetrack, so Lasix PROTECTS the health, welfare and LIVES of horses and jockeys.

- Lasix has been approved throughout North America and much of the New World. Use of Lasix in horses is fully equivalent to the Therapeutic Use Exemptions (TUEs) widely used in human athletics.

I will now present the specific scientific data and research publications supporting the above seven bullet points, as follows:

1/ THE LUNG IS BY NECESSITY A DELICATE TISSUE PRONE TO STRESS FAILURE OF PULMONARY CAPILLARIES:

Lung capillaries must be strong enough to not rupture under the stress of racing, but delicate enough to allow the rapid transfer of oxygen to the red blood cells. Under the stress of racing some incidence of stress failure (rupture) of pulmonary capillaries is inevitable, as described by West el al, 1993, in their paper entitled "***Stress failure of pulmonary capillaries*** *in racehorses with* ***Exercise-Induced Pulmonary Hemorrhage***", Attachment #2 [Our caps, bolding and underlining].

2/ EXERCISE INDUCED PULMONARY HEMORRHAGE, EIPH:

Historically, about 1 % of Horses bleed from their nostrils post-race, called **Epistaxis,** known for at least 300 years. If you endoscope a horse post-race, about 75% of horses show blood in the trachea. These endoscopic findings were first reported by Pascoe et al in 1981, leading to the scientific name, **Exercise-Induced Pulmonary Hemorrhage, EIPH,** Attachment #3.

EIPH is defined as bleeding into the lungs associated with exercise; at some level it occurs in 100% of racing horses. If you do a **Tracheal Wash,** all horses in training show evidence of bleeding into the lungs. The pulmonary damage is CUMULATIVE, and EIPH is equivalent to a production disease in racing horses.

Significant bleeding into the lungs interferes with blood oxygenation (Sanchez et al 2005), slows the horse and is therefore associated with poor racing performance. The bleeding may, at times, be severe enough to cause death, either acutely on the racetrack or soon thereafter, as we will present later.

3/ WATER WITHHOLDING AND EIPH:

American Horsemen long knew that horses run better and bleed less if water was withheld before racing. A four hour water withholding produces a 12 lb or so weight loss, historically a standard pre-race procedure. This long standing field observation of American Horsemen is now scientifically validated, as follows:

4/ OPTIMIZING WATER "WITHHOLDING": LASIX:

When injectable Lasix became available in the late sixties horsemen found that horses bled less and ran better when administered Lasix. Administration of Lasix can increase the water withholding effect to up to about a 28 pound weight loss, Attachment #4.

5/ LASIX AND URINE TESTING: THE FOUR HOUR LASIX RULE:

Questions arose concerning the effects of Lasix on urinary detection of other substances. The urinary dilution effect was first shown to be transient, giving rise to the four hour 250 mg IV / rule, which rule led to a need for detention barns, Attachment #5.

6/ THE LASIX PLASMA THRESHOLD AND URINARY SPECIFIC GRAVITY TEST:

In the early eighties I was asked by the Kentucky Horsemen's Benevolent and Protective Association to identify a blood level of Lasix that would be equivalent to the four hour rule. We ran a 47 horse study and showed that 1 in 1,000 horses would be expected to exceed 30 ng/ml of Lasix in plasma at 4 hours post 250 mg of Lasix IV (Chay et al 1983, Attachment #6.). This threshold was first introduced in Oklahoma in about 1987, where they set the plasma cut-off at 60 ng/ml. This cut-off was later adjusted upward to 100 ng/ml and, with an added 1.010 urinary specific gravity screen, pioneered by Dr. Richard A. Sams at Ohio State, became the national rule.

Lasix is strictly regulated, now usually administered by a third party veterinarian at 4 hours prior to post by rapid IV injection into the jugular vein. Under current rules and modern technologies, including the urinary specific gravity test introduced by Dr. Sams, Lasix does not, to my knowledge, in any way, interfere with drug testing, as I understand was presented by Dr. Richard A. Sams at the June 13-14, 2011, New York Racing Association (NYRA) first International Summit on Race Day Medication at Belmont Park in Elmont, N.Y., Attachment #6.

7/ LASIX PROTECTS AGAINST EPISTAXIS, FRANK BLEEDING FROM THE NOSTRILS:

In 1995 Lasix was approved in New York racing. New York maintained records on the incidence of Epistaxis, frank bleeding from the nostrils post race, and these records show the efficacy of pre-race Lasix in reducing Epistaxis. The New York approval of Lasix reduced the incidence of Epistaxis close to 80%, as shown in Attachment #6. This interpretation was supported by Dr. Anthony Verderosa, the New York Racing Association Chief Examining Veterinarian, who reported a "*>400% decrease*" in the incidence of Epistaxis following the introduction of Lasix. This was the first formal validation of the by then longstanding field observations and experience of American Horsemen with regard to Lasix and Epistaxis, Attachment #7.

8/ LASIX ALSO PROTECTS AGAINST TRACHEAL EIPH:

A definitive Hinchcliff et al 2009 study performed in South Africa on 167 or so horses showed that pretreatment with Lasix reduced the incidence and severity of tracheal EIPH, again validating the long standing field experience of American Horsemen, Attachment #8 Additionally, a more recent 2015 consensus study on Lasix and EIPH authored by Hinchcliff and his colleagues concluded there was *"moderate to high quality evidence that EIPH is progressive . . . ; that it adversely affects racing performance; that severe EIPH is associated with a shorter career duration; [and], that furosemide is efficacious in decreasing the incidence and severity of EIPH.* Attachment #8.

9/ LASIX OPTIMIZES RACING PERFORMANCE:

When a horse bleeds significantly into its lungs it cannot fully oxygenate its blood and its racing performance suffers. Horses showing significant blood in the trachea post-race perform more poorly than horses with minimal or no blood in the trachea. The so called performance "improvement" associated with Lasix is therefore actually more likely a PROTECTION against an adverse effect of EIPH, again consistent with the long standing field experience of American Horsemen, Attachment #9.

10/ LASIX PROTECTS THE LIVES OF HORSES AND JOCKEYS:

About once in every 1,500 races the bleeding into the lungs is sufficient to acutely asphyxiate the running horse. The horse crashes to the ground, with all attendant risks for horse and rider. In 1983 Gunson et al reported nine such cases in Pennsylvania racing; Gunson specifically noted that a complete necropsy was required to identify these cases, since death can occur with no overt evidence of pulmonary hemorrhage at the nostrils. We evaluated the first such case reported in Kentucky and wrote the case up, specifically including acute sudden death among the clinical presentations of EIPH (Harkins et al, 1997). Since then sudden death from EIPH has been identified as the principal non- musculoskeletal injury related cause of death in racing horses, Attachment #10

11/ CLOSING BULLET POINT SUMMARY:

1.1/ All horses RACING bleed into their lungs. Significant bleeding interferes with racing performance and can cause acute death. This condition is now known as Exercise Induced Pulmonary Hemorrhage, EIPH.

1.2/ Historically, American horsemen knew that water withholding before racing PROTECTED against Epistaxis and various adverse effects of EIPH.

1.3/ Starting in about 1969 Lasix was seen to enhance the PROTECTIVE effects of water withholding, and its PROTECTIVE use began to be approved in American racing.

1.4/ Concerns about possible effects on drug testing were addressed by the industry.

5/ Lasix is scientifically proven to PROTECT horses from EIPH. Horses on Lasix bleed less into their lungs and therefore run closer to their true potential. They are less likely to suffer sudden death on the racetrack, Lasix thereby PROTECTS the health, welfare and LIVES of both horse and rider.

6/ The scientifically regulated use of Lasix has been approved throughout North America and much of the New World. Such approved use of Lasix in racing is entirely equivalent to the Therapeutic Use Exemptions used in human athletics.

I now close this analysis and opinion with a restatement of my basic take home message, namely that administration of Lasix PROTECTS the lungs of the racing horse, and in so doing protects the horse and also the jockey.

This analysis and opinions is based on the information available to me at the time of writing; if there is anything about this analysis and opinions that is unclear or could be better expressed, or if I can be of any further assistance to you, please do not hesitate to contact me; in the meantime, I remain,

Yours sincerely,

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